

STATOR OF AN ALTERNATING CURRENT MOTOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a stator of an alternating current motor, particularly to the stator having an integrated yoke with stator coils directly wound thereon so as to simplify the structure of the stator.

2. Description of Related Art

Various kinds of alternating current motors are widely used in almost all fields of industry. The speed and torsion of the alternating current motor depends on phases of the stator and the rotor of the motor. A conventional stator of the alternating current motor normally has a complicated structure which results in a complicated production process. For example, as shown in Figs. 5 and 6, a conventional stator (50) comprises a yoke (51), a winding core (52) fitted in a central cavity of the yoke (51) and symmetrically integrated with two protruded portions (521) at two opposite sides thereof, two insulators (53) respectively provided at opposite ends of the winding core (52), and two stator coils (60) respectively wound around the insulators (53) and the protruded portions (521) of the winding core (52).

The defect of the conventional stator of the alternating current motor is that because the structure of the stator, the stator has at least two components in addition to the insulators (53) and the stator coils (60), thus the production process of the stator must be complicated and the production cost of the stator must be expensive.

Therefore, it is an objective of the invention to provide an improved stator of alternating current motor to mitigate and/or obviate the aforementioned problems.

1 SUMMARY OF THE INVENTION

2 The main object of the present invention is to provide a stator having a
3 simplified structure, wherein the stator has an integrated yoke with the stator coils
4 directly wound thereon so as to simplify the structure of the stator.

5 Other objects, advantages and novel features of the invention will become more
6 apparent from the following detailed description when taken in conjunction with the
7 accompanying drawings.

8 BRIEF DESCRIPTION OF THE DRAWINGS

9 Fig. 1 is an exploded perspective view of a stator of an AC motor in accordance
10 with the invention;

11 Fig. 2 is a perspective view of the stator of the AC motor in accordance with the
12 invention;

13 Fig. 3 is a plan view of the stator of the AC motor in accordance with the
14 invention;

15 Fig. 4 is a cross sectional view along line 4-4 in Fig.3 of the stator of the AC
16 motor in accordance with the invention;

17 Fig. 5 is an exploded perspective view of a conventional stator of an AC motor;
18 and

19 Fig. 6 is a perspective view of the conventional stator of the motor.

20 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

21 As shown in Figs. 1 and 2, a stator comprises an integrated yoke (10), upper and
22 lower insulators (20, 21) respectively provided at upper and lower ends of the yoke (10),
23 and two joint keys (30) provided at two opposite sides of the yoke (10).

24 The yoke (10) is integrally formed with an outer annular member (11) and an

1 inner annular member (12), and symmetrically defined with two winding slots (13)
2 disposed between the outer and inner annular members (11, 12) at two opposite lateral
3 sides thereof. Two cut-outs (14) are symmetrically defined at two opposite sides of the
4 outer annular member (11) and respectively communicated with middle positions of the
5 winding slots (13).

6 The upper and lower insulators (20, 21) are formed in an identical shape
7 substantially corresponding to the shape of the yoke (10) and symmetrically assembled
8 on the upper and lower ends of the yoke (10). The upper and lower insulators (20, 21)
9 respectively have two outer rings (201, 211) and two inner rings (202, 212) integrally
10 formed therewith, two pairs of slots (203, 213) defined at opposite sides thereof
11 corresponding to the winding slots (13) of the yoke (10), and two pairs of openings (204,
12 214) defined at opposite outer sides thereof corresponding to the cut-outs (14) of the
13 yoke (10).

14 Peripheries of upper ends of the outer rings (201) and peripheries of lower ends
15 of the outer rings (211) are respectively formed with outer edges (205, and 215)
16 therearound. Peripheries of upper ends of the inner rings (202) and peripheries of lower
17 ends of the inner rings (212) are respectively formed with inner edges (206, and 216)
18 therearound. Peripheries of lower ends of the slots (203) and peripheries of upper ends
19 of the slots (213) are respectively formed with joint edges (207, 217) therearound.

20 Whereby the upper and lower insulators (201, 211) are respectively assembled
21 on upper and lower ends of the yoke (10) by means of the joint edges (207, 217)
22 respectively inserted into the corresponding winding slots (13). As illustrated in detail in
23 Figs. 3 and 4, the joint edges (207, 217) are combined together in the winding slot (13)
24 to form a passage for receiving of wires of stator coils (40). The wires of the stator coils

1 (40) are respectively extended through the openings (204, 214) and cut-outs (14) into
2 passages combined by the joint edges (207, 217) and wound around the upper and lower
3 insulators (20, 21) to bind the upper and lower insulators (20, 21) together with the yoke
4 (10). After the stator coils (40) are wound, the joint keys (30) are respectively fixed into
5 the cut-outs (13) of the yoke (10), such that a stator is easily produced.

6 The advantage of the invention is that because the yoke (10) of the stator is
7 formed in an integrated member, the stator coils (40) are directly wound around the yoke
8 (10), and the stator (10) has fewer components than those of the conventional stator, so
9 that the production cost of the stator (10) of the invention is no more than that of the
10 conventional stator, yet the cost is low due to the smaller number of components in the
11 present invention.

12 Another advantage of the invention is that the upper and lower insulators (20,
13 21) are easily assembled on the yoke (10) by simply inserting the joint edges (207, 217)
14 into the winding slots (13), and the stator coils (40) are able to be directly wound around
15 the upper and lower insulators (20, 21) and bound together with the yoke (10), whereby
16 the assembly of the stator is simplified, so that the production efficiency of the stator (10)
17 is increased.

18 It is to be understood, however, that even though numerous characteristics and
19 advantages of the present invention have been set forth in the foregoing description,
20 together with details of the structure and function of the invention, the disclosure is
21 illustrative only, and changes may be made in detail, especially in matters of shape, size,
22 and arrangement of parts within the principles of the invention to the full extent
23 indicated by the broad general meaning of the terms in which the appended claims are
24 expressed.